information technology cadd services

Special points of interest:

- Placing North Arrows
- Plotting News
- FAQ Files
- MicroStation V8 tips

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION INFORMATION TECHNOLOGY

CADD NEWS

OnSite Study Begins

CADD Services and the Construction are conducting a feasibility study of Bentley's construction inspection and stakeout software called OnSite. The objective of the feasibility study is to preliminarily evaluate the OnSite product. The evaluation will include the following areas:

* Inspection with and without GPS.
* Construction stakeout.
* Inspection in a stakeless environment.
* Quantity reporting from inspected data.
* Development of project as-builts.
* Coordination with NCDOT Standards and Specifications documents.

OnSite, from the developers of MicroStation and GEOPAK, puts existing and proposed design data in the hands of field personnel on a portable electronic device. For the study, we will be using tablet PCs that will be connected to survey-grade GPS units. The study will include inspection activities on the Clayton Bypass and will parallel traditional inspection methods. Input data include, but are not limited to, planimetrics, roadway design, drainage systems, pay item quantities, and a proposed 3D model. Additional information about OnSite can be found at

http://www.bentley.com/en-US/Products/Bentley+OnSite/

Look for more information in upcoming issues..

CADD Support Web Upgrade

The Look and Feel of the CADD Support website has changed. Check it out at.

www.ncdot.org/~cadd

Now that our “NEW LOOK" is in place it is time to start adding new content. So I invite you to look over the site and let us know what we can add to the site to make it more useful to you, our users. Email your thoughts and comments to me at:

rjrobinson@dot.state.nc.us

I look forward to hearing and implementing your suggestions.

Inside this issue:

The Training Corner – COM 195 – GEOPAK Survey

Com 195 is a two day course developed as a guide to provide uniform practices for Department personnel in the use of GEOPAK Survey software for the importation and the display of field data. While It is not a source for the definition of field surveying practices or for the creation / implementation of survey accuracy specifications it is hoped that this course will instill on students the need and usefulness of such standards.

The course presents the standard software tools used to complete a GEOPAK Survey project. The tools and procedures shown allow the student to complete a project from data collector to completed MicroStation file. Topics covered include.

- Preliminary Field Procedures
- NCDOT File Specifications
- Survey Project Preferences and Setup
- Datasets and Data Processing
- Visualizing and Manipulating Survey Data
- DTM Procedures
- Coordinate Geometry
- Import and Data Transfer Procedures
- Miscellaneous Survey Applications

Prerequisites: Microstation Basics For Civil Engineering (COM 132) or Essential Microstation Part 1 and Part 2 (COM 126 & COM 127) with Microstation V8 Update Training (COM 131). **Professional Development Hours (PDH's)** 12

How to get CADD training

With each new version of software comes the never ending activity of learning how the programs great new features work and which old ones don't . The introduction of MicroStation V8 and it's associated programs is no exception.

The additions of unlimited named levels, models and a slew of user interface enhancements can make one's first attempt to use V8 a bit over whelming. If you need training for a new employee or feel you need a refresher course in any of our CADD products, all you need to do is go to the CADD Support Website at.

http://www.ncdot.org/~cadd

Then select Training from the main menu. From the Training page download and fill out the CADD request Training forms and mail the form to.

Ed Williams
Engineering Application Services
1597 Mail Service Center
Raleigh, NC 27699-1597

CADD Services will get you into the next available class provided there is no waiting list.

Remember that it is not necessary to continue to fill out request if a request is on record. If in doubt email Ed at *elwilliams@dot.state.nc.us*

Also, when making a request checked off all the classes that you wish to takes. (i.e. It's not necessary to complete Microstation before you **can request** Geopak). Once we receive and enter a request our database keeps up with them.

MicroStation - Roadway Automatic Sheet North Arrow Placement Program

from the Roadway FAQ files

The following is now available in the roadway workspace.

Any plan sheets files (PSH) created as of today will be able to use this program to automatically place north arrow cells on plan sheet cells. Designers can activate this program by clicking on the toolbox in the RD_DSN tool frame.

There are two ways to get help on this program. You can browse through the Roadway web site for the Application Sheet North Arrow Program link, or use the new feature. We are excited to introduce the Compiled HTMLHelp Metafile (.chm) in our in-house applications. chm is a industry standard that corporation like Microsoft and Bentley are using as a medium to provide custom help assistance to any program they've written. Roadway CADD Support will now use this effective utility and will explore the options of video tutorials and more interactive communication between the program and the Designer to be embedded inside the chm files.

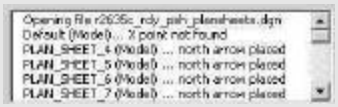
Starting with this program, the blue Help button on the application dialog box will be the gateway to chm help, which physically exists in our workspace.

Here is what the chm help file looks like.

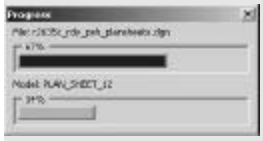
Please refer to the Roadway web site and/or the chm help before you begin working with the program.

UPDATE – North Arrow Placement Program

The Roadway Automatic Sheet North Arrow Placement Program has been upgraded to version 1.2. The following are enhancements to the program.



* Version 1.2 now support multiple NCDOT plan sheet Microstation models per file. Designers can create as many plan sheet models as desired in one plan sheet file. For example, file (r2007_rdy_psh_plansheets.dgn can have 28 plan sheet models (name PLAN_SHEET_4 thru PLAN_SHEET_31) plus the default model.



* Progress bars are displayed to help keep track with files and models being processed.

* A Troubleshoot section has been include with the Help (chm) file.

GEOPAK - RD_AutoXD New Features

from the Roadway FAQ files

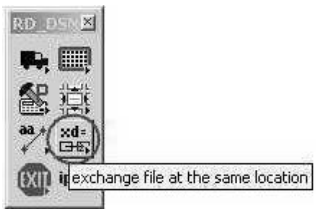
Some new useful features have been added to the RD_AutoXD application.

* Recognized file and model names.
* Remembers the original file/model as the HOME key.
* Cycles through the list of previous files/models with the UP or DOWN arrow key.

One of the main inefficiency of Bentley's Microstation XD command and the previous versions of RD_AutoXD is that Designers did not have the ability to go back to the previous file/model. Once the exchange of files/models has occurred, if the previous file/model is not referenced to the active file/model, then there were no way to go back to that previous file. Unfortunately, Designers will have to close the file/model and go to the desired file/model, at the same time losing the view's location and orientation.

PROCEDURE:

While in a Microstation file/model, click the RD_AutoXD toolbox.



Choose any referenced graphical element (in a referenced file/model) to go into.

Once in the selected file/model, click the RD_AutoXD toolbox again. From here there are three options:

* Option 1 - Select another graphical referenced element to go to that file/model.
* Option 2 - Depress the HOME key on the keyboard to go back to the original file/model.
* Option 3*- Depress the UP or DOWN arrow key on the keyboard to cycle through the previous file(s)/model(s) and depress the ENTER key to go to that file/model.

* Note in the lower left corner, displays the previous file and model names.

Also the adjustment for the differences in file's global origin has not been addressed with this release.

This write up can be found in our web site under Roadway Index -

http://www.ncdot.org/doh/preconstruct/highway/roadway/index/Apps/RD_AutoXD/

Plotting– HP4500mfp solutions

Dee Wilcox has sent out the following In response to some of the questions/ problems that were brought up during the recent CADD coordinators meetings.

1. **Sleep mode can be changed in the Plotter Icon** - Print Configuration - Sleep mode wait time - Highlight wait time desired - Press select. (30 minutes is default)

2. **Should be using the Bentley IP 4500 driver** for B/W (with NC DOT pen table) and Color plots (without NC DOT pen table).

3. **Paper jams - 81 errors** - should be called into NC DOT Help desk and Tereck Support 919-484-9270 - Firmware upgrade needed if these are false paper jams. Also if these are related to Drawer 2, the Drawer 2 needs to check for proper alignment and screw placement by Tereck rep. For Sylva, please call HP Warranty 1-800- 474-6836 to have rep from Atlanta or closer handle problem per Tereck.

4. **Saturated area fills**, especially on 500' OCE paper - Change paper type on plotter to Plain and Print Quality to Draft. After change the scanner needs a new Profile for Plain Paper set up and calibrated.

5. **To speed up drying time (plot throughput)** - Can change drying time. Ink Icon - Select Drying Time - Highlight desired drying time - Press select. (Optimal is default). Watch for wet plots if set too low.

6. **If the 4500 scanner is getting 51-1 errors with media moving in scanner**, the scanner entry/exit sensors need replacing with new type switches, Q1277-60088 and Q1277-60089. This occurs with light weight paper or wrinkled originals and the sensor is returning to a non-actuated position. DDC - call into NC DOT Help Desk, and Tereck (or HP Warranty Support line for Sylva).

HP500ps plotter and printing PDF files

1. BE SURE to use the Microsoft queue, D#D#-asset# NOT theD#D#-500bw or the D#D#-500c Iplot queues.

2. If getting memory errors on the plotter, after selecting the Microsoft print queue set the Properties - Advanced tab - Avoid out of memory errors before you submit the job.

3. Use Adobe version 7, version 6 has many printing problems.

4. If getting partial or cropped prints do this. In the Adobe appcheck what the application see as the page size, bottom left of screen. Next, using version 7, after selecting print and choosing the Microsoft queue, select the Properties and Select the paper size. Ansi E is good for something that fits inside 34x44. Remember that the plotter can not plot to the full size of the sheet, it has a printable area, that is about 35.6 or 33.6 width for whichever paper you have loaded. If you can not find the paper size that works, that choose custom sizes or edit paper size to make a custom paper size. Ok to that and just before you say print on the first screen, Choose Auto Rotate and Center, and for scaling you should choose None unless you want to Fit to the Plotter Margins to force it to fit to paper size you selected.

If you have any questions at all about the 4500mfp or any of our plotters please give Dee Wilcox a call at 919.250.4177 ext. 243.

GEOPAK - XS Movie Navigator VBA

from the Roadway FAQ files

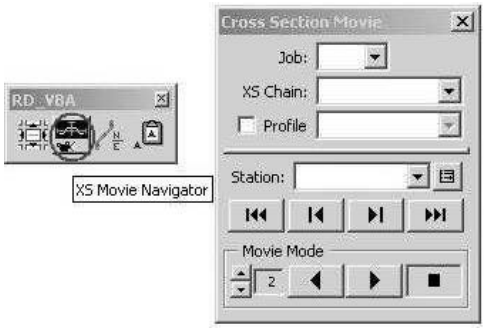
Roadway Designer asked:

When using Cross Section Navigator, is there any way to set the view to always center the intersection of the existing XS ground line and the XS cell's vertical component? When working with cross sections on a project in the mountains, I can't keep my view zoomed in close enough to check the proposed templates without chasing the templates up and down because of the constant elevation changes.

Reply:

Currently the Geopak Cross Section Navigator does not have the ability to lock in the view with respect to a profile or grade. As you move from one cross to another, the view is dependent on the fixed location of the cross section horizontal green cell dashed line.

However, Bentley has developed a separate VBA called XS Movie to navigate through various cross sections in a file. XS Movie does have the ability to lock the view with respect to a profile or grade, as an option. Oak has slightly modified the code to prevent some errors that may occurred with the original version for Roadway.



As you can see, the buttons look like the model navigator. The model navigator used the buttons from the XS Movie Navigator. The XS Movie Navigator can be launched from the RD_DSN tool frame, RD_VBA tool family. Any stored profile or grade, proposed or existing, in the GPK database can be used with the XS Movie Navigator. Please see the below reference web help link for further detail before you use this tool. I hope this helps and let us know if you have any questions. XS Movie Navigator Web Help:

http://ncdot.org/doh/preconstruct/highway/roadway/index/Apps/XSmovie/default.html

MicroStation V8 – Accudraw shortcut

Need to key in bearings? Here is a little known trick that makes this easier.

First, set your AccuDraw settings to read out in bearing mode and set the level of precision you desire (settings>design file>coordinate readout). You may also want to toggle off "context sensitivity" for AccuDraw, which will keep the compass from rotating (settings>AccuDraw>Operation tab).

Now the good part! AccuDraw can operate in polar mode (hitting the spacebar toggles between rectangular and polar mode).

The following shortcuts have been programmed for polar mode input:

Northeast equals quadrant #1

Northwest = quadrant #2

Southwest = quadrant #3

Southeast = quadrant #4

For Example;

The quadrant number replaces the standard input of N45^23'45"E with a Key-in of 1 45^23'45"

and AccuDraw will interpret it as N45^23'45"E

Do you hate keying in the Shift-6 keystroke to get the degree input? Try hitting the semicolon instead. So now your input can be: 1 45;23'45

MicroStation V8 – Using Windows Explorer to Open Files & Attach References

Did you know you can quickly open files and attach references by using a drag-and-drop method via Windows Explorer?

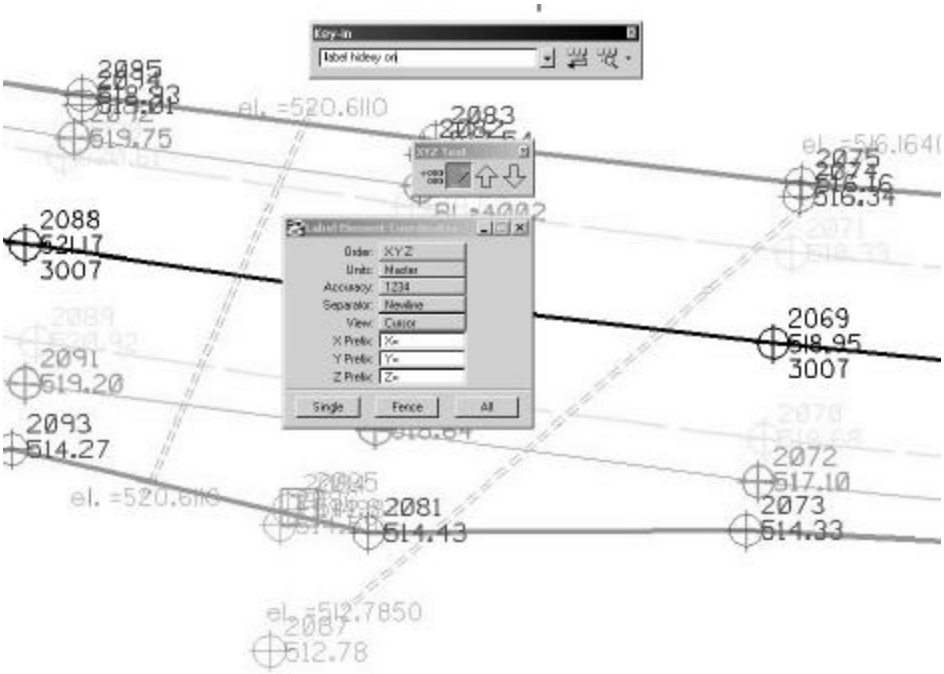
From Windows Explorer, you can click on and drag a single file from any folder onto your MicroStation window and MicroStation will prompt you if you'd like to open the file you just selected.

What may be even more beneficial as a time saver is when the References Dialog Box is open and active, multiple files can be selected in Windows Explorer and can be click-and-dragged onto the References Dialog Box. MicroStation will then go through each file individually and ask you your preferred attachment method. This can be quite handy when attaching multiple references at one time.

MicroStation V8 – Slick Key-IN

Need to label the elevations at both ends of a culvert in a drawing file you just created in Geopak Survey (a 3D file of course)? First, select the Label Element Coordinates command from the xyz palette. Then In the key-in browser type: **"label hidexy toggle"** this key-in will do just that – hide the XY fields () and display only the elevation when you select the element.

This was method was used in the below screen shot to label the elevations of a pipes.



On-Site Photos

North Carolina Department of Transportation Information Technology

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CADD Services

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Fax: 828.326.9119

The Last Word – What's special about this number

0 is the additive identity.
1 is the multiplicative identity.
2 is the only even prime.
3 s the number of spatial dimensions we live in.
4 is the smallest number of colors sufficient to color a planar map.
5 is the number of Platonic solids.
6 is the smallest perfect number.
7 is the smallest number of faces of a regular polygon that is not constructible by straightedge and compass.
8 is the largest cube in the Fibonacci sequence.
9 is the maximum number of cubes that are needed to sum to a positive integer.
10 is the base of our number system.
11 is the largest known multiplicative persistence.
12 is the smallest abundant number.
13 is the number of Achimedian solids.
14 is the smallest number n with the property that there are no numbers Relative prime to n smaller numbers.
15 is the smallest composite number n with the property that there is only one group of order n.
16 is the only number of the form xy = yx with x and y different integers.
17 is the number of wallpaper groups.
18 is the only number that is twice the sum of its digits.
19 is the maximum number of 4th powers needed to sum to any number.
20 is the number f rooted trees with 6 vertices.
21 is the smallest number of distinct squares needed to tile a square.
22 is the number of partitions of 8.
23 is the smallest number of integer-sided boxes that tile a box so that no two boxes share a common length.
24 is the largest number divisible by all numbers less than its square root.
25 is the smallest square that can be written as a sum of 2 squares
26 is the only positive number to be directly between a square and a cube.
27 is the largest number that is the sum of the digits of its cube.
28 is the 2nd perfect number.
29 is the 7th Lucas number.
30 is the largest number with the property that all smaller numbers relatively prime to it are prime.
31 is a Mersenne prime.
32 is the smallest 5th power (besides 1).
33 is the largest number that is not a sum of distinct triangular numbers.